D2

7. (Amended) A process according to claim 1, wherein the temperature ranges between 10 °C and 70 °C and the pressure between 4 and 20 bar.

8. (Amended) A process according to claim 1, wherein the CTFE is liquid.

REMARKS

Claims 1, 3 and 7-9 are pending. Claims 1, 3 and 7-9 are rejected. Claims 3, 7 and 8 are amended. Support for the amendments can be found throughout the application, for instance in the specification and claims as originally filed. No new matter is added. Claims 1, 3 and 7-9 are submitted for further consideration at this time. Applicants respectfully request reconsideration and withdrawal of all rejections.

Claim Rejection - 35 U.S.C. § 112

Claims 3 and 8 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Applicants respectfully point out that the rejection is moot in view of the claim amendments indicated herein. Applicants urge withdrawal of the rejection.

Claim Rejection - 35 U.S.C. § 102

Claims 1, 3, 7 and 9 are rejected under 35 U.S.C. § 102 as anticipated by Abusleme et al. (U.S. Patent No. 5,498,680). It is alleged that Abusleme et al. teaches or suggests each and every element of the claimed invention.

Applicants respectfully disagree. The present invention in a preferred embodiment is concerned with a process for the synthesis of chlorotrifluoroethylene (PCTFE) (co)polymers, containing at least 80% by moles of CTFE, the complement to 100 being one or more fluorinated monomers in aqueous emulsion, in the presence of a microemulsion of (per)fluoropolyoxyalkylenes, a fluorinated surfactant and an inorganic initiator. The fluorinated surfactant has formula: $R_f - X^-M^+$, wherein R_f is a C_5-C_{14} (per)fluoroalkyl chain, or a (per)fluoropolyoxyalkylene chain, X^- is $-COO^-$ or $-SO_3^-$, M^+ is Na^+ or K^+, and the initiator is a potassium and/or sodium persulphate. In addition, the temperature is in the range of 0°C - 150°C and pressure is in the range of 3 - 80 bar.

In contrast, Abusleme et al. discloses the preparation of fluorinated (co)polymers by polymerizing fluorinated monomer(s) in aqueous emulsion comprising: surfactant, initiator, and a microemulsion of fluoropolyoxyalkylenes containing H atoms in the end group and/or in the chain. In Examples 1 and 3, Abusleme et al. discloses the copolymerization of TFE with ethylene (E) by using ammonium persulphate as initiator, a K salt of a carboxylic derivative of a perfluoropolyoxyalkylene as surfactant and a microemulsion of fluoropolyoxyalkylene containing H atoms. In contrast, Examples 2 (comparative) and 4 (comparative) disclose the same polymerization of TFE/E as in Examples 1 and 3, with the exception of a microemulsion of perfluoropolyoxyalkylenes not containing H atoms.

Applicants therefore respectfully urge that Abusleme et al. cannot be considered to teach or suggest the claimed invention. It has been previously alleged that the combined use of initiator and surfactant as claimed is disclosed by Abusleme et al. However, Applicants respectfully disagree. Applicants first point out that the combination of initiator

and surfactant as claimed is by no means specifically taught or suggested in the Abusleme et al. reference. Instead, the reference simply provides a long list of suitable surfactants and initiators. Indeed, it is disclosed that the surfactant of Abusleme et al. can be indifferently selected from a list of numerous surfactants, for example:

- perfluorocarboxylic or perfluorosulphonic acids C_5-C_{11} and salts thereof;
- mono- or bicarboxylic acids deriving from perfluoropolyoxyalkylenes and salts thereof;
- non-ionic surfactants formed by a perfluoropolyoxyalkylene chain bound to a polyoxyalkylene chain;
- cationic surfactants having one or more perfluoroalkyl and/or perfluoropolyoxyalkylenes chains

(See col. 4, lines 24-34). Moreover, any such surfactant can be used in combination with any initiator indifferently selected from the numerous listed initiators:

- inorganic peroxides, for instance ammonium or alkali metal persulphates;
- organic peroxides, for instance disuccinylperoxide and terbutyl-hydroperoxide;
- organic/inorganic redox systems, such as ammonium persulphate/sodium sulphite, hydrogen peroxide/aminoimimomethansulphinic acid;
- azo compounds.

(See e.g., paragraph bridging col. 4 and col. 5). Thus, Abusleme et al. clearly does not specifically teach or suggest the specific combination of a potassium and/or sodium persulphate with a carboxylic or sulphonic derivative of a perfluoropolyoxyalkylene or perfluoroalkyl chain salified with Na^+ or K^+, as claimed. Applicants thus urge in particular

that Abusleme et al. is unable to teach or suggest any combination of initiator and surfactant for the preparation of chlorotrifluoroethylene (co)polymers, as required by the claimed invention.

Applicants wish to further point out that the claimed invention is concerned with the use of a microemulsion of perfluoropolyoxyalkylenes (which do not containing H atoms), whereas Abusleme et al. teaches the use of a microemulsion of fluoropolyoxyalkylenes containing H atoms. Indeed, the microemulsion of Abusleme et al. is not a microemulsion of perfluoropolyoxyalkylenes as is alleged at page 3 of the Office Action. For purposes of clarification, Applicants point out that the term "microemulsion" is intended to refer to, as would be recognized by those of ordinary skill in the art, a system consisting of water, oil and surfactant, wherein droplets of oil in water are not macroscopically visible (See e.g., Handbook of Microemulsion Science and Technology, page 13, lines 1-4 and paragraph bridging lines 249-250, 1999) (copy attached). That is, in the claimed invention a "microemulsion of perfluoropolyoxyalkylene" identifies a microemulsion wherein the oil phase consists of a perfluoropolyoxyalkylene compound, for instance Galden® as in Example 1, having the formula CF_3O-$(CF_2CF(CF_3)O)_m(CF_2O)_n$-$CF_3$ and containing perfluorooxyalkylene repeating units.

Thus, the claimed invention can be further distinguished over the cited Abusleme et al. reference, in that the reference is unable to teach or suggest an oil forming microemulsion wherein the perfluoropolyoxyalkylene does not contain H atoms, that is, is completely fluorinated, as in the claimed invention (See Examples). In fact, the Examples (comparative) of Abusleme et al. actually teach away from the use of perfluoropolyoxyalkylenes, since such compounds are taught as a negative influence on

polymerization, with respect to higher induction time (col. 1, lines 34-41) and lower productivity (Table 1), as compared to fluoropolyoxyalkylenes containing H atoms. Applicants therefore respectfully urge that the cited Abusleme et al. reference cannot be considered to teach or suggest the claimed invention.

As a final matter, Applicants would like to point out that the improved PCTFE (co)polymers of the claimed invention show no discoloration or reduced weight loss, which is the result of the specific combination of initiator and surfactant, as claimed. Applicants note in particular that the PCTFE of Example 1, obtained with a persulphate in combination with perfluoropolyether carboxylic derivative, both being salified with K, displays no discoloration and reduced weight loss, as compared to PCTFE obtained with the ammonium persulphate of Abusleme et al., all other conditions remaining the same (Example 5 comparative), or as compared with PCTFE obtained with a surfactant of formula (I) salified with NH_4^+ also as in Abusleme et al., again the other conditions being unchanged (Example 4 comparative). Accordingly, in view of all of the above, Applicants urge withdrawal of the rejection.

Claim Rejection - 35 U.S.C. § 103

Claim 8 is rejected under 35 U.S.C. § 103 as being obvious over Abusleme et al. in view of Campbell et al. (U.S. Patent No. 4,577,044). It is alleged that it would have been obvious to use liquid chlorotrifluoroethylene as disclosed by Campbell et al. in the process of Abusleme et al. in order to control process temperature.

Applicants respectfully disagree. The present invention in a preferred embodiment is discussed above.

Abusleme et al. is also discussed above.

Campbell et al. discloses the telomerization of CTFE by reacting CTFE with fluorooxytrifluoromethane CF_3OF, with or without a solvent, and obtaining CTFE telomers not having an end group containing Cl.

In other words, the disclosure of Campbell et al. is concerned with a process entirely different from the polymerization process of the Abusleme et al. reference. Thus, those of ordinary skill in the art would have had no motivation to combine the teachings of the Abusleme et al. and Campbell et al. references. Applicants note in particular that Campbell et al. does not teach or suggest the use of any reaction medium containing a surfactant, initiator and perfluoropolyoxyalkylene microemulsion. Also important, Applicants point out that the disclosure of Campbell et al. is unable to cure the deficiencies of Abusleme et al. discussed above. Clearly, those of ordinary skill in the art viewing the cited references would find no teaching or suggestion or motivation with respect to the claimed invention. Applicants therefore urge withdrawal of all rejections.

In view of the amendments and remarks above, Applicants respectfully submit that this application is in condition for allowance and request favorable action thereon.

In the event this paper is not timely filed, applicants hereby petition for an appropriate extension of time. The fee for this extension may be charged to our Deposit Account No. 01-2300, along with any other additional fees which may be required with respect to this paper referencing Attorney Docket No. 108910-00011.

Respectfully submitted,

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Enclosure: Handbook of Microemulsion Science and Technology

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MARKED UP COPY OF THE CLAIMS

3. (Amended) A process according to claim [2] 1, wherein M^+ is K^+.

7. (Amended) A process according to claim 1 [or 9], wherein the temperature ranges between 10 °C and 70 °C and the pressure between 4 and 20 bar.

8. (Amended) A process according to claim 1 [or 9], wherein the [reaction medium comprises liquid] CTFE is liquid.